

34

UNITED STATES DEPARTMENT OF AGRICULTURE  
Flood Control Coordinating Committee  
Washington, D.C.

April 5, 1939

MEMORANDUM FOR FIELD FLOOD CONTROL COORDINATING COMMITTEES:  
(Through BAE, FS and SCS)

Subject: Farm Security Administration Liaison

The attached copy of letter to the Regional Directors of the Farm Security Administration is self-explanatory and is of course designed to promote cooperation and insure proper integration of the programs of that Administration with flood control activities.

Below are the names and addresses of their Regional Directors. It is requested that they be given adequate notice as to hearings scheduled in the future.

<u>Region</u>	<u>Name</u>	<u>Address</u>
1	No Regional Directors for Washington Regional Supervisor, Philip Henderson	1320 G. St., N.W.
2	Harry S. Muir	County Court House, Milwaukee, Wisc.
3	R. C. Smith	342 Mass. Ave., Indianapolis, Ind.
4	H. H. Gordon	227 E. Edenton St., Raleigh, N.C.
5	E. S. Morgan (Acting)	Bell Bldg., Montgomery, Ala.
6	T. Roy Reid	Donaghey Trust Bldg., Little Rock, Ark.
7	Cal A. Ward	Union Terminal Bldg., Lincoln, Nebraska
8	C. M. Evans	3211 Commerce St., Dallas, Texas
9	Jonathan Garst	227 Wells Fargo Bldg., San Francisco
10	C. H. Willson	810 <sup>1</sup> - 14th Street, Denver, Colorado
11	Walter A. Duffy	Terminal Sales Bldg., Portland, Ore.
12	L. H. Hauter,	Amarillo Bldg., Amarillo, Texas

FLOOD CONTROL COORDINATING COMMITTEE

Attachment  
Letter to Regional  
Directors

By Austin C Ringland  
A. C. Ringland, Chairman.





## FARM SECURITY ADMINISTRATION

(Copy of identical letter to all Regional Directors in Farm Security Adm.)

Regional Director,  
Farm Security Administration  
U.S. Department of Agriculture  
Denver, Colorado.

Subject: Flood Control Program of the  
U.S. Department of Agriculture

Dear Mr. Willson:

The Secretary of Agriculture has set up a Flood Control Coordinating Committee to deal with all problems in connection with flood control work which is carried out by the Department of Agriculture in cooperation with the Army engineers.

The Flood Control Act of 1936, as amended by the Flood Control Acts of 1937 and 1938, establishes a policy for the control of destructive flood waters which menace the general welfare. Congress has projected a national program and has authorized expenditures over a five-year period to be administered by the War Department and the Department of Agriculture in cooperation. The construction of dams, floodwalls, levees, and other works of protection on rivers is the responsibility of the War Department. Works and measures of run-off retardation, soil stabilization and reforestation on the flood producing watersheds of these rivers is the task of the Department of Agriculture. The prescribed method of procedure first calls for a preliminary examination, the object of which is to determine whether there is a flood problem of such nature and extent as to properly come under the Department of Agriculture flood control authority. If so, a survey is recommended in order to specifically delineate the flood source areas and make detailed proposals for an operations program. The operations phase of flood control in correlation with the Army engineers represents the second major step, following as the logical culmination of planning activities.

The watersheds selected for preliminary examination and survey are restricted to those for which Congress has given specific authority by legislative direction, and the Department of Agriculture must adhere to this limitation. Intensive surveys are already underway on the watersheds in your Region in order to determine the operations that need to be carried out.

During the early stages of the preliminary examinations, it is generally the policy to hold hearings which are frequently a joint undertaking with the War Department. The object of these hearings is to develop the views



and suggestions of local interests and to supplement basic information obtained in the preliminary examinations. They are especially helpful in connection with procuring the local cooperation found necessary in many instances to insure the efficacy of an operations program. The field coordinating committees have been requested to notify your office of all future hearings which may be scheduled. In addition to this, it is suggested that periodic contacts be made with the appropriate field coordinating committee in order that the interests of the Department of Agriculture as a whole, may be protected.

Should any flood control project be contemplated in your region affecting lands of the FSA or lands on which the FSA holds a mortgage, information to that effect will be transmitted to the Office of the Administrator, Washington, D. C., for the use of the Flood Control Coordinating Committee in giving adequate protection to and consideration of the Department of Agriculture's interests as affected by such proposal.

FSA personnel will not enter into any discussions with the Army engineers concerned regarding a proposed flood control project other than to secure such necessary information as may be useful to the Department of Agriculture. It is suggested that this could be accomplished by seeking the information through the appropriate field flood control committee chairmen.

Sincerely yours,

/s/ Will W. Alexander

Administrator

UNITED STATES DEPARTMENT OF AGRICULTURE

FLOOD CONTROL COORDINATING COMMITTEE  
Washington

April 10, 1939

MEMORANDUM TO FIELD FLOOD CONTROL COORDINATING COMMITTEES  
(Through BAE, FS, and SCS)

Re: MONTHLY TIME, COST AND PROGRESS REPORTS  
FOR  
Flood Control Examinations and Surveys

The Flood Control Coordinating Committee has designed Form FC-5, Individual Monthly Report, so that each employee paid from flood control funds may submit a simple, monthly breakdown of the time used on various phases of the flood control study and planning program. Form FC-6 to summarize progress and cost by individual watersheds has also been designed.

For the present, at least, a breakdown of major activities only is desired. Form FC-5 provides for the name, title and salary of the individual, the bureau to which he is attached, his headquarters for travel purposes, and the bureau chairmanship administratively responsible for his activities. Columns are provided for each day of the month so that the name of the watershed and the code number of the activity performed may be supplied.

A breakdown of less than one day is not considered necessary, and the watershed or activity receiving the major portion of effort for the day should be charged with the full day. Technicians who submit their expense vouchers promptly at the close of the month need not fill in columns 3 to 6 inclusive, as this information will be available to the clerical staff who will complete the form when preparing Form FC-6, Monthly Summary of Time and Cost.



On the reverse side of Form FC-5 is listed each code number corresponding to the activity for which time should be segregated.

Code Number 1 covers all work except leave incident to a preliminary examination including preparation of the preliminary examination report.

Codes Number 2 to 10 inclusive, will be used for detailed surveys. Code Number 2 covers administration and supervision. This will apply, in general, to Field Working Committee members and Party Leaders and occasionally to Senior Representatives when acting as Party Leaders.

Code Number 3, Flood Damage Appraisal Studies, Code Number 4, Sedimentation Studies, and Code Number 5, Hydrologic Studies, cover these activities in the broad or overall sense.

Code Number 6, Engineering Studies and Planning for Structures, covers that phase of the program devoted to gathering data and making plans for engineering structures or works such as debris retaining structures, storage ponds, stream bank stabilizing structures, roadside drainage work, etc. It is not to include engineering work incident to land-use charges, such as laying out terraces, drainage ways, etc.

Code Number 7 covers the broad phase of land-use studies and planning on agricultural lands, abandoned lands, forest areas, ranges, etc., in its various steps from economic farm size to complete change of land usage.

Code Number 8 covers writing of the report after studies are completed and the data have been gathered.

Code Number 9 covers time of drafting and clerical help. Technicians should not identify their time as engaged in either drafting or clerical work.

Code Number 10, Leave, is self-explanatory.

These individual reports will serve a threefold purpose: (1) They will be helpful to the individual employee as a view of his accomplishment for the month. (2) They will give valuable information to the Party Leader in charge of the survey and will enable him to prepare the consolidated progress and cost form for comparison with his budget estimate. A valuable picture will also be given of the emphasis, in terms of man power and dollars, being placed on each phase of the program for the particular watershed under study. (3) Individual reports for persons headquartered in regional offices and devoting their time to preliminary examinations or to supervision of detailed surveys, or both, will enable the members of the Field Working Committee and the Field Coordinating Committee to analyze the emphasis being placed on the various watersheds comprising the Committee's responsibilities.

Form FC-6, Monthly Summary of Time and Cost for the Month of \_\_\_\_\_, which should be prepared by a designated member of the clerical force, after all individual monthly reports have been received, will provide a check against budget estimates. One such form should be prepared for each watershed, the information from Form FC-5 being posted by code number opposite the name of each individual who reported time spent on the watershed during the month.

Form FC-6, when prepared, should be forwarded in duplicate through bureau channels to the Flood Control Coordinating Committee, Washington, D.C. At the office of the Committee, a Master Summary of Cost, FC-7, reflecting the total field expenditures of all bureaus will be prepared and a copy forwarded to the interested Field Coordinating Committee.

FLOOD CONTROL COORDINATING COMMITTEE

By A. C. Ringland

Chairman







UNITED STATES DEPARTMENT OF AGRICULTURE

FLOOD CONTROL COORDINATING COMMITTEE  
Washington

April 12, 1939

MEMORANDUM FOR FIELD FLOOD CONTROL COORDINATING COMMITTEES:  
(Through BAE, FS, and SCS).

Subject: Clarification of preliminary examination report  
outline of April 1, 1938.

To prepare an adequate preliminary examination report, certain fundamental questions must be answered by those participating in its preparation. The answers to these questions will determine whether an affirmative or negative report will be submitted. Furthermore, a negative answer to any one of these fundamental questions will indicate that no further investigation should be made; instead the report should be prepared and submitted with a negative recommendation.

These questions are as follows:

1. Are prospective flood and siltation damages apt to be significant? If they are found to be insignificant, go no further and submit a negative report containing substantiating evidence.
2. If they are found to be significant, proceed to the questions of hydrology and stream behavior and to the watershed conditions which produce this behavior and if there appears to be no feasible control program on the watershed which can reasonably be expected to alter stream behavior in such a way as to reduce prospective flood and siltation damages, go no further and submit a negative report.

3. If however, at this stage it is found that something significant might be done, submit a preliminary report as per the outline of April 1, 1938, and as clarified in this statement.

Note: It will be desirable where flood damages appear to be significant for the Field Committee to arrange immediate contact with the District Office of the Corps of Engineers and other pertinent Federal and State agencies to obtain available data on flood damages, hydrology, and information on their programs and developments planned or underway on or affecting the watershed.

#### CLARIFICATION OF PRELIMINARY EXAMINATION REPORT OUTLINE

The Outline was designed as a framework upon which the field men could build a brief report of the conditions causing flood damages in a specific watershed and the feasibility of Agriculture contributing to their alleviation. If the order of presentation provided in the outline appears to be unsuited to a particular watershed, the field personnel may make necessary modifications. Specifically, each report must clearly demonstrate whether or not a survey is justified.

The following statements are intended, therefore, to add to or to clarify the corresponding numbered sections of the outline of April 1, 1938:

Syllabus: A summary, preferably not exceeding one page, but not necessarily limited to one paragraph.



1. Description: Include only information necessary to reveal the contribution of physical factors to the flood problems.

2. Occupancy and Economy:

Include only material which relates directly to the flood problem, e.g.: give data on population, tax delinquency, ownership, water economy, etc., only when these directly relate to and illustrate the causes and effects of floods.

3. Hydrology:

In relation to conditions in the watershed, describe and evaluate data pertaining to the effect of proposed remedial measures on run-off and flood stages, and siltation.

4. Flood Damage and Erosion Loss:

(a) Data must include an approximate evaluation of the principal types of past damage as a basis for estimating probabilities of future damage. If there appears to be significant out-of-the-watershed-downstream damages, evaluate approximately that portion which can be attributed to the stream being examined. Where possible, separate sedimentation from water damage.

5. (As in outline of April 1 -- see also item 3, page 2 of this memorandum).

6. Miscellaneous:

Include brief statement on State and local laws which will affect remedial measures, such as soil conservation district laws, zoning laws, etc. Indicate the probable extent of

local, State, private and quasi-public body cooperation and support.

7. Flood Problems and Remedial Measures:

The following is substituted for Section 7d in the Preliminary Examination Report Outline:

"After careful consideration of the facts presented in the preceding sections, give a qualitative expression of the probable relation between the cost of an action program and the expected benefits."

Supplement:

(To be submitted with the preliminary report where a survey is recommended, but not bound with the report.)

If a survey is recommended, state what provision should be made for collecting basic data prior to initiating the survey on a full staff basis. Give needs for personnel and equipment, and indicate the character of studies and location of proposed hydrologic installations and the time required therefor.

Submit a statement including a tentative survey work outline, air photo needs, tentative project organization, advantageous locations for field headquarters and probable types of local cooperation in carrying out the survey.

FLOOD CONTROL COORDINATING COMMITTEE

By A. C. Ringland  
A. C. Ringland, Chairman.



37

UNITED STATES DEPARTMENT OF AGRICULTURE  
FLOOD CONTROL COORDINATING COMMITTEE  
Washington

April 20, 1939

MEMORANDUM TO FIELD FLOOD CONTROL COORDINATING COMMITTEES  
(Through B.A.E., F.S., and S.C.S.)

Subject: Use of Special Survey Data.

On several surveys questions have been raised as to (1) how much material of a specialized technical nature should be included in the survey report, and (2) the subsequent disposition and possible publication of such technical material after final approval of the survey report.

Referring to question (1), no hard and fast rules can be applied. Only such material should be included in the report as will provide a reasonable background and justification for the conclusions and recommendations reached. Naturally the report should be balanced, and the technical information should be in proportion to the relative importance of each of the several specialized fields involved. It is realized that some data collected during the survey may not be included in a report, yet if it is necessary in order to draw conclusions and to make recommendations, it should be obtained. The degree to which such information should be summarized for inclusion in the report proper or appendices (the appendices may be bound in the report or, if bulky, bound separately) will have to be worked out locally. The Working Committee members should not arbitrarily eliminate material from the report without previously consulting the respective technical men; likewise, the technical people must realize that a properly balanced report is essential and all extraneous material eliminated.

Relative to question (2), it should be kept in mind that the party leader is custodian of all field data and information obtained by the survey party. His custodial responsibilities end only when the party is relieved of its responsibilities for the survey project, at which time the data should be turned over to the Working Committee member whose Bureau has Survey Chairmanship. After final acceptance of the report by the Washington Committee, the data should be turned over to the Bureaus responsible for their collection for whatever disposition they see fit. These data will be subject, however, to further use on other surveys where applicable. Data covering a specialized field may then be published at their own expense by the respective agencies provided, however, that prior approval of the Washington Flood Control Coordinating Committee is obtained. In no event should such publications divulge any recommendations as to the works program until the survey report has been acted upon by Congress or other final authority.

FLOOD CONTROL COORDINATING COMMITTEE

By Arthur C. Ringland  
Arthur C. Ringland, Chairman.





UNITED STATES DEPARTMENT OF AGRICULTURE  
FLOOD CONTROL COORDINATING COMMITTEE  
Washington

April 21, 1939

MEMORANDUM NO. 38

MEMORANDUM FOR FIELD FLOOD CONTROL COORDINATING COMMITTEE NO.  
(Through B.A.E., F.S., and S.C.S.)

Subject: Review of the Budget Estimates and Survey Completion Dates.

Review of the budget estimates and survey completion dates recently submitted by the field indicates the urgent necessity of so replanning each survey as to make the work more productive and to reduce the time and expense involved.

Committee memorandum of February 9 and previous instructions stressed the necessity of developing survey work outlines. These instructions also emphasized the need for taking advantage of all existing data pertinent to the purposes of the survey. Adequate fore-planning of the surveys by the preparation of suitable work outlines has not generally been done; in some instances full advantage has not been taken of existing data.

In sizing up the problems on the watershed and determining the character, location and extent of remedial measures needed, it is felt that more things are generally being done on the surveys than are desirable for the purpose, and that traditional research techniques are being employed more than is desirable on those things that are being done. In most cases conclusions as to watershed problems and application of remedial measures might be based more largely on generalized studies, analysis of existing information and the application of judgment and experience gained from previous work done by the agencies concerned in the watershed under survey or in similar areas. It is admittedly necessary, however, to formulate reasonably defensible programs for flood control, thus requiring a reasonable minimum of supporting data. But, the survey report need not give what might be termed a "work plan" or "blueprint" for an operations agency to follow, but rather a "program" stating in general terms the extent and cost of various practices contributing to flood and siltation control for the watershed as a whole or for large units of high priority.

On the other hand, more emphasis is needed on those phases of the survey which provide the basis for evaluating the effectiveness of the remedial program in terms of reducing flood and silt damages, and as it determines the cost-benefit ratios. Here again on many watersheds considerable information is available on the extent of flood damages. An examination should be made of such information as to its adequacy before an undue amount of time is spent in gathering this information first-hand.

Study of the flood survey program indicates that the Department  
the following problems:





## UNITED STATES DEPARTMENT OF AGRICULTURE,

FLOOD CONTROL COORDINATING COMMITTEE  
Washington

April 22, 1939

MEMORANDUM NO. 39

MEMORANDUM FOR FIELD FLOOD CONTROL COORDINATING COMMITTEES  
(Through BAE, FS, and SCS)

Subject: Operations Program.

Reference is made to circular memorandum of April 21 to Field Coordinating Committees on the review of the budget estimates and survey completion dates. This memorandum of policy on survey reports needs to be supplemented by one directed to the ultimate objective of our program, i.e. operations.

1. In March of 1938, a year ago, the President asked the Secretary "how soon we could go forward with the upstream engineering and land-use phases of a flood control program". The Secretary, in reference to the conversation, wrote the President "by July 1, 1938 the Department of Agriculture will be prepared to undertake comprehensive flood control work, on a carefully planned basis, on a number of critical watersheds, if special funds are made available".

2. The following June the War Department Civil Functions Appropriations Act for the F.Y. 1939 provided for the transfer of \$4,000,000 from flood control funds to the Department of Agriculture for works of watershed improvement upon waterways authorized by Congress for flood protection by the War Department.

3. Section 7 of the Flood Control Act of 1938 authorized the sum of \$10,000,000 to be expended by the Department of Agriculture for watershed operations over a five-year period at not exceeding \$2,000,000 a year, commencing July 1, 1939.

4. The Budget did not approve an appropriation of \$2,000,000 for the first year, i.e. the F.Y. 1940, under this authorization because the \$4,000,000 already made available for operations had not been allotted for project expenditure, and also because the Department had not yet formulated a specific program for operations.

5. Nevertheless, it will be seen that the Department has received from Congress ample authority and funds to initiate its part in the development and construction of a national program of flood protection outlined by the organic Flood Control Act of 1936.

6. Since the authority and funds have now been available for some time and commitments have been made to the President, it will be appreciated





that a point has been reached where it is imperative that our examinations and surveys be pointed more directly to the initiation of operations without undue delay. It is of first importance that definitive action be taken by the field in cooperation with this Committee to assure:

(a) The completion of survey reports for some watersheds or units thereof so that operations may be undertaken in order that the \$4,000,000 now available may be obligated for projects, in whole or in part, before plans are presented to the Budget as the basis for further appropriations; it is highly desirable that this be done before the Budget hearings commence;

(b) The completion of survey reports for a number of additional watersheds or units thereof so that proposals for operations may be included in the estimates to be submitted to the Budget when called for late this summer.

The extent to which the foregoing objectives may be met on individual surveys will be discussed at forth-coming field conferences of which you have been advised.

7. In order that these objectives may be carried out effectively within these time limitations, certain requirements, legal and administrative, must be met in respect to the projects. Chiefly these are:

(a) Correlation with the War Department. Watershed improvements as now authorized are to be undertaken only on waterways authorized by Congress for improvement by the War Department. (Exception: Rio Grande and Pecos on account of Reclamation Service.) See War Department Civil Functions Appropriation Act of June 11, 1938 and Section 7, Flood Control Act of June 28, 1938.

(b) Approval of Plans. First, by the Secretary of Agriculture as required by Section 7 of the Flood Control Act of 1938 and by the Appropriation Act of 1938; and second, by the President. In his directive of July 7, 1938, he said in part: "As to the obligation of \$4,000,000 by the Department of Agriculture for initiating projects on watersheds for run-off, waterflow retardation and soil erosion, it is my desire that the fund be held in reserve, subject to the submission to me, for my consideration of a program, including designated projects arranged in the order of their urgency.

(c) Cooperation. Where non-Federal lands are involved in a flood control project, it is necessary to obtain agreements in principle with legally recognized bodies of land owners or operators. These agreements are to be set forth specifically in the survey plan and provide for a general acceptance of a division of Federal and local responsibility and share of cost in respect to land-use control measures, including maintenance. In the meanwhile it is planned to undertake at once, in cooperation with field representatives, the formulation of a guiding policy to govern such agreements. It is desired at this time to call attention to this important objective. The fact that there are mechanisms for cooperation within the project, and that cooperation "is possible" or "is hoped for" is not enough. The Budget requires specific information on cooperation as a basis





of approval of project estimates. Also see Section 4, Flood Control Act of 1937 and the Secretary's memorandum of October 29, 1938, requiring the establishment of soil conservation districts.

8. It will be appreciated that these requirements affect a number of the 18 watershed surveys, now underway, and will make for delay in the initiation of operations particularly where cooperation is to be developed. From this standpoint the watersheds may be divided as follows:

(a) No legal or administrative limitations affecting whole or part of the drainage area; Congress has authorized the War Department to undertake waterway improvements therein, and there are significant areas of Federal lands -- National Forest, public or other, included within the watersheds;

Merrimack (White Mountain National Forest); Coosa (Chattahoochee National Forest) also Soil Conservation Districts established; Tallahatchie (Holly Springs National Forest) also Soil Conservation District favorably voted; St. Francis (St. Francois and Wappapello National Forest Purchase Units); Mountain Creek (Pike National Forest); Rio Puerco (Santa Fe National Forest, public lands and purchase area); Los Angeles (Angeles and San Bernardino National Forests).

(b) Congressional authority given to War Department to improve the waterway but local cooperation needs to be developed;

Buffalo Creek; Codorus Creek (Soil Conservation District established); Youghiogheny; Maskingun; Washita (Soil Conservation Districts established); Kickapoo.

(c) No Congressional authority as yet for War Department to undertake waterway improvements but Federal lands -- National Forests and public -- included within the drainage area; Upper Gila; Queen Creek; Boise.

(d) Neither Congressional authority given to War Department nor local cooperation developed;

Concho; Trinity; Cherry Creek.

9. The watersheds listed under 8 (a) are the ones that seem to permit the initiation of operations at this time, and with the exception of the Los Angeles, for only parts of the drainage area. Nevertheless, if operations can be technically and economically fully justified for any such parts of these watersheds, the possibility of action should be immediately considered even though the area may not be of the first priority from the standpoint of the watershed as a whole. This possibility for operations will be discussed at the field meetings.

10. It is apparent that for the watersheds listed under 8 (b), (c) and (d), it remains to be seen to what extent present limitations on action can be removed in time for presentation of operating plans to the Budget as justification for an appropriation of \$2,000,000 as provided for the second year under the authorization of \$10,000,000 for operations to 1944.





11. In view of the fact that but \$4,000,000 is available for construction and but \$10,000,000 authorized for construction for the next five years ahead, it becomes manifest that operations can be undertaken only with the assistance of the CCC and WPA. Therefore, the survey plans should include estimates for CCC assistance. The possibility of such assistance should be considered in consultation with the operating agencies, Forest Service and Soil Conservation Service as the case may be. CCC labor can be supplemented by drawing on flood control funds for additional technicians, skilled foremen or other personnel, camps, material and equipment needed for effective work.

FLOOD CONTROL COORDINATING COMMITTEE

By Arthur C. Ringland  
Arthur C. Ringland, Chairman.



UNITED STATES DEPARTMENT OF AGRICULTURE  
FLOOD CONTROL COORDINATING COMMITTEE  
Washington

April 27, 1939

MEMORANDUM NO. 40

MEMORANDUM FOR FIELD FLOOD CONTROL COORDINATING COMMITTEES  
(Through BAE, FS, and SCS)

Subject: Precipitation and stream gaging needs on surveys.

The inadequacies of available data on rainfall-runoff relations on many of the watersheds now under survey are generally well recognized. Although deficiencies are felt most heavily in regard to the precipitation and infiltration capacity aspects of these relations, they also extend to streamflow.

It is desirable that these inadequacies be met on future surveys and in some instances on those current surveys which are to extend at least to or near the end of the present calendar year. Special committees have been functioning in Washington for the purpose of preparing suggestions for collecting needed additional hydrologic data. These suggestions will include descriptions of standardized procedures and equipment as a guide to the survey technicians concerned.

In order to hasten provision for purchasing and installing the necessary equipment, it is desirable that you submit at the earliest possible date your needs for additional precipitation and stream gaging installations respectively (1) for those current surveys which may extend to or near the end of the present calendar year (keeping in mind the probable seasonal occurrence of significant storms during such period) and (2) this is especially needed for those watersheds which the Committees have recommended as being of the highest priority where preliminary examination reports already submitted do not give necessary information.

In preparing requests the following considerations should be borne in mind:

Rain Gaging Needs:

For each watershed concerned the number of gages needed and their proposed location should be shown on a map. An accompanying statement should indicate definitely what provisions you expect to make for operating and maintaining the gages, for record taking, and tabulation, and who will be responsible for keeping the records when obtained and tabulated.

Because a number of the locations selected will undoubtedly be of value to the Weather Bureau both in connection with its permanent national gaging network and in its storm design analysis service to



the flood control program, that Bureau will be given the opportunity to review the requests submitted. They will check the locations in order to determine their value to them and may suggest in some instances alternate locations. It is likely that the Weather Bureau will want to provide for the permanent maintenance of those stations which fit into its national network in which case special arrangements will be worked out here where necessary for that Bureau to operate these stations.

For your further information the rain gages to be supplied will be of the Friez Reconnaissance recording type equipped with dual traverse feature to permit recording of individual storms producing up to 12 inches of rainfall and with interchangeable clock gears to permit daily or weekly readings as may be desired.

#### Snow Measurement Needs:

In areas where accumulated snow has an important bearing on the flood problem, the questions of snow depth and water content are of great concern. To obtain the needed information it will of course be necessary to run snow courses. The Committees should consider whether present snow survey activities are adequate for our flood program; if not should be prepared to make recommendations for additional snow course surveys both as to location and operating agency. In each case the Committee should supply estimates of the approximate cost to the flood surveys.

#### Stream Gaging Needs:

The number and type of stream gages proposed for each watershed concerned should be located on a map. An accompanying statement should be prepared giving briefly the reasons for proposed locations. The statement should also include the same definite expected provisions for operation, record taking, etc., as are called for under rain gaging needs. You should also indicate whether or not it will be possible to start taking records immediately after installations are made. Since the type of installation will depend on whether stream gages are to be temporary or permanent, this factor should be considered in making your requests.

In view of the interest of the U. S. Geological Survey in the permanency of certain proposed installations, that agency will most likely be consulted in the case of all requests submitted and special arrangements made where necessary for turning over funds to it that are needed to construct and maintain such gaging stations as fit into its program.

Some Committees feel that the Department of Agriculture should maintain the temporary stations. The question arises whether we should, in view of the Geological Survey's responsibilities for stream gaging, ourselves construct and maintain even temporary gaging stations which

are to be operated for the period of the survey on small areas under different cover conditions. We should like your comment on this point.

The early submission of your rain and stream gaging needs will permit the Washington Committee to hasten provision for the purchase of the necessary equipment for the current surveys. Requests should be made through regular bureau channels.

FLOOD CONTROL COORDINATING COMMITTEE

By Arthur C Ringland  
Arthur C. Ringland, Chairman.





47

UNITED STATES DEPARTMENT OF AGRICULTURE

FLOOD CONTROL COORDINATING COMMITTEE  
Washington

April 27, 1939

MEMORANDUM NO. 41

MEMORANDUM FOR FIELD FLOOD CONTROL COORDINATING COMMITTEES  
(Through BAE, FS, and SCS)

Subject: Use of aerial photographs on surveys.

The increasing investment in aerial photographs for flood control surveys raises the question of considering how such photographs may be utilized to the maximum advantage in all phases of the survey program. World-wide experience to date indicates their great potential value, with proper technical application, in providing highly accurate information at a minimum cost. This has been made possible largely through simplifying field procedures and reducing the time required to collect and analyze field information.

Present standards and extent of use of air photographs already in the hands of field parties vary considerably. In several instances survey personnel with the aid of such stereoscopic equipment as is now available are getting surprisingly good results in identifying cover, soil and erosion, and flood plain conditions. This applies to the classification and study of broad problem areas as well as expediting the more detailed study of sample areas.

In other instances the photographs are being used merely as "maps". However helpful this may be it falls by a considerable margin to realize on the far greater benefits that effective stereoscopic analysis can produce. The fact that aerial photographs are made to overlap indicates definitely that they are intended to be utilized stereoscopically in preference to the unaided eye.

The Committee is therefore taking steps at this time to examine the possibilities of utilizing or developing types of stereoscopic equipment and techniques that will meet most effectively the needs of the flood control surveys.

In order to take advantage of what has been learned to date on flood surveys we would like a statement for each survey specifically answering the following questions:

1. Is any use being made of air photos received to date?



2. If so, describe (a) methods of use, (b) types of work applied to, (c) extent to which used in field, (d) extent to which used in office, and whether with naked eye or stereoscopically.

3. Where stereoscopic equipment is being utilized give name, type and design including degree of magnification, attachments (e.g., magnifying lenses), and approximate cost.

4. Are any survey personnel specializing in the analyses of the air photographs? Who?

5. Have any standard procedures or techniques been developed that are considered satisfactory?

6. What savings if any are resulting or are likely to result from effective use of photos in terms of greater accuracy, savings in field time or other elements?

7. Any suggestions for improving shortcomings of present equipment and procedures to meet more effectively the special purposes of the flood survey program?

The Committee intends to look into other sources also, within and outside of the Department, for further information on the subject. It is also likely that provision will be made for two or more field seminars to exchange ideas and information on progress to date in the use of aerial photographs and to consider the formulation of plans for a handbook on equipment and procedures.

Early replies to the above request will be appreciated.

For your information in the meantime we are attaching herewith copies of a mimeographed partial bibliography on aerial photography.

FLOOD CONTROL COORDINATING COMMITTEE

By Arthur C. Ringland  
Arthur C. Ringland, Chairman.





Oct. 4, 1938

## AERIAL PHOTOGRAPHY

- Andrews, G. S. Tree heights from air photographs, by simple parallax measurements. [a graduate's thesis, Assoc. professional engineers of the province of British Columbia] 1936. 54p. illus., chart. Reprinted [from] Forestry Chronicle, June 1936.
- Baird, V., Jr. Determining tree and grove condition by use of air maps. maps. Cal. Citrograph 22: 440. July 1937.
- Baisley, Herbert Kenneth, 1896- Aerial photography, (with 13 plates) (In Smithsonian Institution. Annual report, 1936. Washington, 1937. p. 383-390. 13 pl. on 7 l.)
- Banks, H. E. Using aerial photographs for topographic mapping. Engin. News-Rec. 116(1): 16-17. Jan. 2, 1936.
- Carlier, Andre'. La photo-topographie aerienne et l'exploitation des forêts coloniales. (Aerial photo-topography and utilization of colonial forests.) Rev. Internatl. du Bois. 2(13): 42-52. Jan. 1935. Translation.
- Eidmann, H. Das Lustbild als Mittel zum raschen Erkennen von Fratzschäden forstlicher Grotzschädlinge (Airplane photos for rapid surveys of defoliation by forest insect pests). Forstwiss. Centbl. 57(6): 173-176. March 1935.
- Flint, H. R. Sky maps for the forester. illus. Amer. Forests 36: 697-9. N. 1930.
- Flint, Howard R. We are flattered. Serv. Bull. 19(6): 2-3. March 18, 1935.
- Foster, Ellery. The use of aerial photographs in mapping ground conditions and cruising timber in the Mississippi River Bottom Lands, New Orleans, La., Southern forest experiment station, 1934. 6p. maps. (Southern forest experiment station. Occasional paper no. 37). Minco.
- Fagberg, Nils. Flygbilder och flygbildlasning. (Aerial photographs and their interpretation). Svenska Skogsvårdsforenings Tidskrift 31, heft 3: 335-373. Aug. 1933. Rev. Jour. Forestry 32(9): 1025-1926. Dec. 1934.
- Hosko, F. Use of aerial photography for forest management in Canada. illus. Pulp and paper of Canada. 36(8): 387, 389. July 1935.

(Over)



Moir, Stuart. Comments on the use of aerial photographs for forestry purposes in the United States. Forestry Chron. 12(1): 61-62. Feb. 1936,

...Multi-lens camera for aerial mapping. Engin. News-Rec. 117 (18): 617. Oct. 1936.

Nakayama, Hiroichi. Forsttaxation aus Luftbildern. I. Über die Entwicklung und Ergebnisse der Forsttaxation aus Luftbildern. (Forest survey by aerial photography. I. The formation and development of forest survey by aerial photography.) p. 43-59. 1935. Title in Japanese and German: text Japanese. Bibliography: p. 56-58. German summary: p. 58-59.

Novosselsky, A. Vozmozhnost Raznostoronnego ispolzovania materialov planovoi aerofotos' anki okupivshikhsia uzhe pri lesoustroistve. (On the utilization of oblique aerial photography in forestry.) Trudy Po Lesnomu Opytnomu Delu - published by the State Research Institute for Forestry and Forest Industry, 1930. (7): 71, Leningrad, USSR. Translation.

Rothery, Julian E. The use of vortical aerial photographs in forest mapping and timber estimating. Jour. Forestry 33 (6): 587-589. June 1935.

Salverda, Z. Luchrfoto-kaarteering. (Mapping by aeroplane photography.) Tectona 29(9): 710-716. illus. Sept. 1936

Seely, H. E. Aerial photography in forest surveys. Empire Forestry Jour. 13(2): 244-247. 1934.

Seely, H. E. The use of air photographs for forestry purposes. Forestry Chron. 11(4): 278-293. Dec. 1935.

Skappel, H. Luftfotografiet og fotogrammetrien som hjælpemiddel ved skogmåling og skogtaksasjon (Aero-photography and photogrammetry as an aid to measuring and appraising the forest). illus. (Cont.) Tidsskr. Skogbruk 44(1): 4-8. Jan. 1936.

U. S. Forest Service. Aerial survey handbook. Washington, D. C. U. S. Forest Service. p. 24. 1935. Mimeo.

Weber, A. N. Timber type mapping from the air. Jour. Forestry 29: 426-28. Mar. 1931.

Wilcox, F. R. An introduction to mapping methods as used in map compilation from aerial photographs. Forestry Chron. 11(4): 294-299. Dec. 1935.

Wilcox, F. R. An introduction to mapping methods; as used in map compilation from aerial photographs. p. 17-20. New York state ranger school Alumni news.



## AERIAL PHOTOGRAPHY AND SURVEYING

Andrews, C. S. Tree-heights from air photographs by simple parallax measurements. illus. "References". Forestry Chron. 12(2): 152-197. June 1936. Note: Errata "Tree heights..." For. Chron. 12(3): 342. Sept. 1936.

Ryker, Harrison C. Aerial photography method of determining timber species. 8p. illus., diagrs., tables. Reprinted from the Timberman, March, 1933.

Wilcox, F. R. Gatineau scale ratiometer for use with vertical photographs in determining scale and ratio. Forestry Chron. 12(2): 198-201. June 1936.

...Aerial protection against fires in the great national forests. illus. Paper 26(11): 26-27, 30, 32. May 19, 1920.

## AERIAL SURVEYS

Flint, Howard R. Aerial forestry. Serv. Bull. 19(1): 2-3. Jan. 7, 1935.

Oregon. State planning board. Reference data showing aerial surveys in Oregon. Prepared by C. N. Bennett, research supervisor, under direction of V. B. Stansbery, consultant, Oregon State planning board. Published by the board as a report on Project no. 265-6905 conducted under the auspices of the Works progress administration. June, 1937. Portland, 1937/ 1 p. l., 3 numb. l. map, tables.

...Aerial surveys in National forests. Air Services 19(5): 19-20. May 1934.

Allegri, E. Fotografia Forestale (Forest photography). illus.,  
tables, diags. A-Alpe 35: 57-70. Feb./Mar. 1938

...Air photographs for forestry purposes. Jour. Forestry 36: 261.  
Feb. 1938

Guislain, A. La Photographie Aerienne et L'Aviation au Service des  
Forestiers (Aerial photography and aviation in the service of  
foresters). Illus., diagr. Rev. Eaux et Forêts 76: 485-492.  
June 1938.

...Photographs aid foresters; aerial survey best for accuracy and  
economy. Timber Trades Jour. 145: 333. Apr. 30, 1938

...Stereoscopic mapping with multiple projector. Indian Forester  
64(4): 249-250. April 1938. (Multiplex projector being built  
by Bausch and Lomb Optical Co. for the U. S. Army Air Corps)